

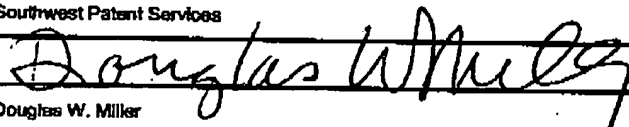
PTO/SB/21 (08-04)
Approved for use through 07/31/2006, OMB 0651-0031
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

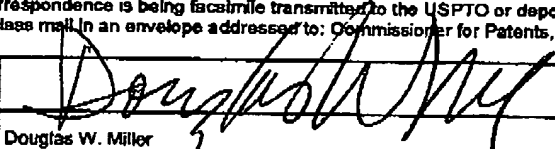
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	10/026,171	
	Filing Date	December 21, 2001	
	First Named Inventor	Agaplos K. Agaplos	
	Art Unit	1755	
	Examiner Name	James W. Pastenczyk	
Total Number of Pages in This Submission	13	Attorney Docket Number	1998UK024.D1.US

RECEIVED
CENTRAL FAX CENTER
FEB 23 2006

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input checked="" type="checkbox"/> Affidavits/Declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Reply to Missing Parts/Incomplete Application	<input type="checkbox"/> Landscape Table on CD	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	Remarks Supplemental Declaration submitted to include data page.	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm Name	Southwest Patent Services	
Signature		
Printed name	Douglas W. Miller	
Date	February 23, 2006	Reg. No. 38,606

CERTIFICATE OF TRANSMISSION/MAILING		
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.		
Signature		
Typed or printed name	Douglas W. Miller	Date February 23, 2006

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/026,171
Applicant : Agapios Agapiou, et al.
Filed : December 21, 2001
TC/A.U. : 1755
Examiner : James W. Pasterczyk

Confirmation No. 9429

Docket No. : 1999U024.D1.US
Customer No. : 25959
Date : February 23, 2006

RECEIVED
CENTRAL FAX CENTER

FEB 23 2006

Commissioner for Patents
Mail Stop Amendments
P. O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL DECLARATION UNDER 37 CFR § 1.132

Sir:

I, Chi-I Kuo, declare as follows:

I am a co-inventor of the description and all the claimed subject matter in the above referenced patent application. The purpose of this Declaration is to demonstrate that the claims describing heating techniques used in the reaction between metallocenes and methyl alumoxane (MAO) resulted in unexpected and surprising improvement (lowering) of reactor fouling and maintenance or improvement in catalyst activity, when compared to no added heat during the reaction between the metallocenes and MAO. The techniques claimed, furthermore, are not disclosed in either WO 96/35729 or US 5,914,289 (Razavi I or II). In the examination of the above referred patent application, the Examiner relies on these two references, Razavi I and/or Razavi II, in rejecting the claims. Under my direction and control, a series of experiments was conducted to evaluate the catalyst preparation techniques of these two references and compare these reference techniques to our claimed techniques.

Catalyst Preparation Comparing Univation and Razavi I&II Methods**Univation Catalyst Preparation**

1999U0024.D1.US.132.Kuo.2.22.06.doc

- 1 -

weighing the cooled resin. Notes and photos about fouling characteristics of each polymer are included in the accompanying documentation of the runs.

As table 1 and the photos clearly indicate, pre-heating the metallocene/MAO mixture prior to heating it with silica is critical to obtaining the improved (lower) fouling and (higher) catalyst activity performance. A catalyst was made (00277-132-2) using the standard conditions for the examples in the Razavi documents (no pre-heating of the metallocene/MAO mixture, but heating the metallocene/MAO/silica mixture at 110°C for 90 minutes) and polymerized in a 2.2 liter autoclave reactor. The resulting polymer fouled the reactor badly (see photos 78 & 79, attached, corresponding to polymerization runs 00311-78 & 00311-79 respectively). When a catalyst was made in run 00311-80 using identical reagents to the ones in the above example but with pre-heating the metallocene/MAO mixture prior to silica deposition/reaction(as presently claimed), the resulting polymer after polymerization at identical conditions exhibited granular morphology and no fouling was observed (photo 80).

We believe that the importance of the pre-heating step (our invention) is paramount to obtaining a non-fouling catalyst when using bridged metallocenes because driving the sparingly soluble metallocene reaction with MAO to the complete ion pair, allows the totally soluble catalyst component to stay chemically attached to the support and thus prevent fouling.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or an patent issuing therefrom.

Respectfully submitted,

2-23-2006

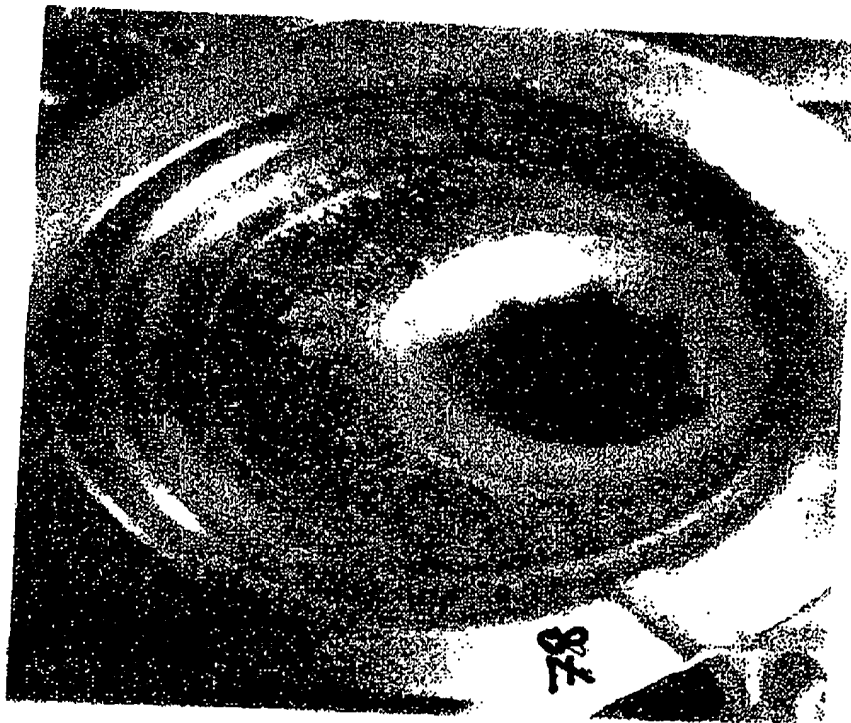
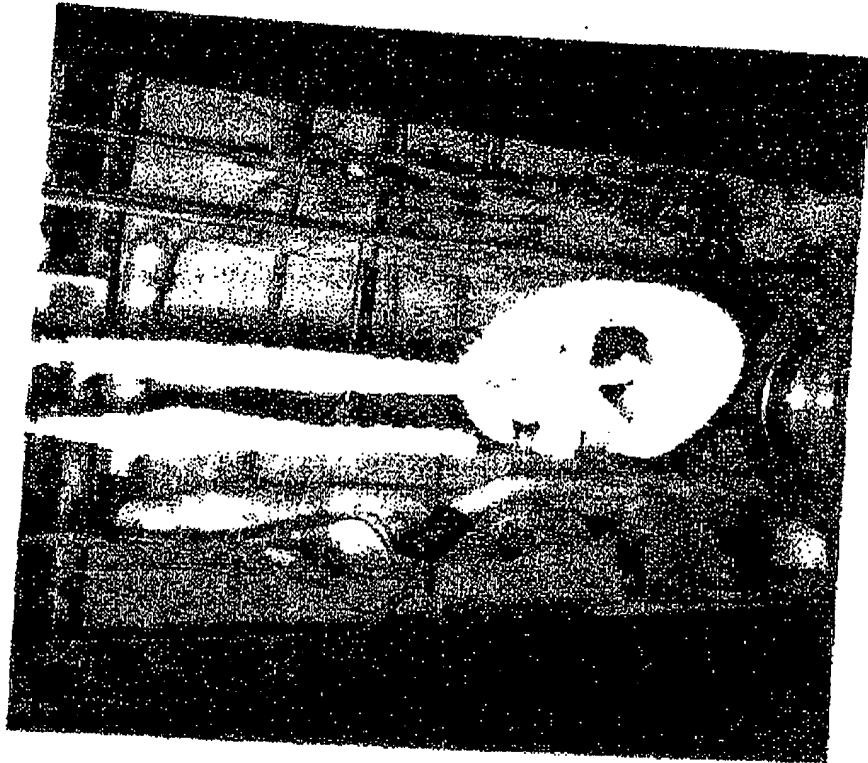
Date

Chi-I Kuo

Chi-I Kuo

Declaration dated 2.23.06 Attachment 1 of 3
USPN 10/026,171 Docket No.: 1999U024.D1.US

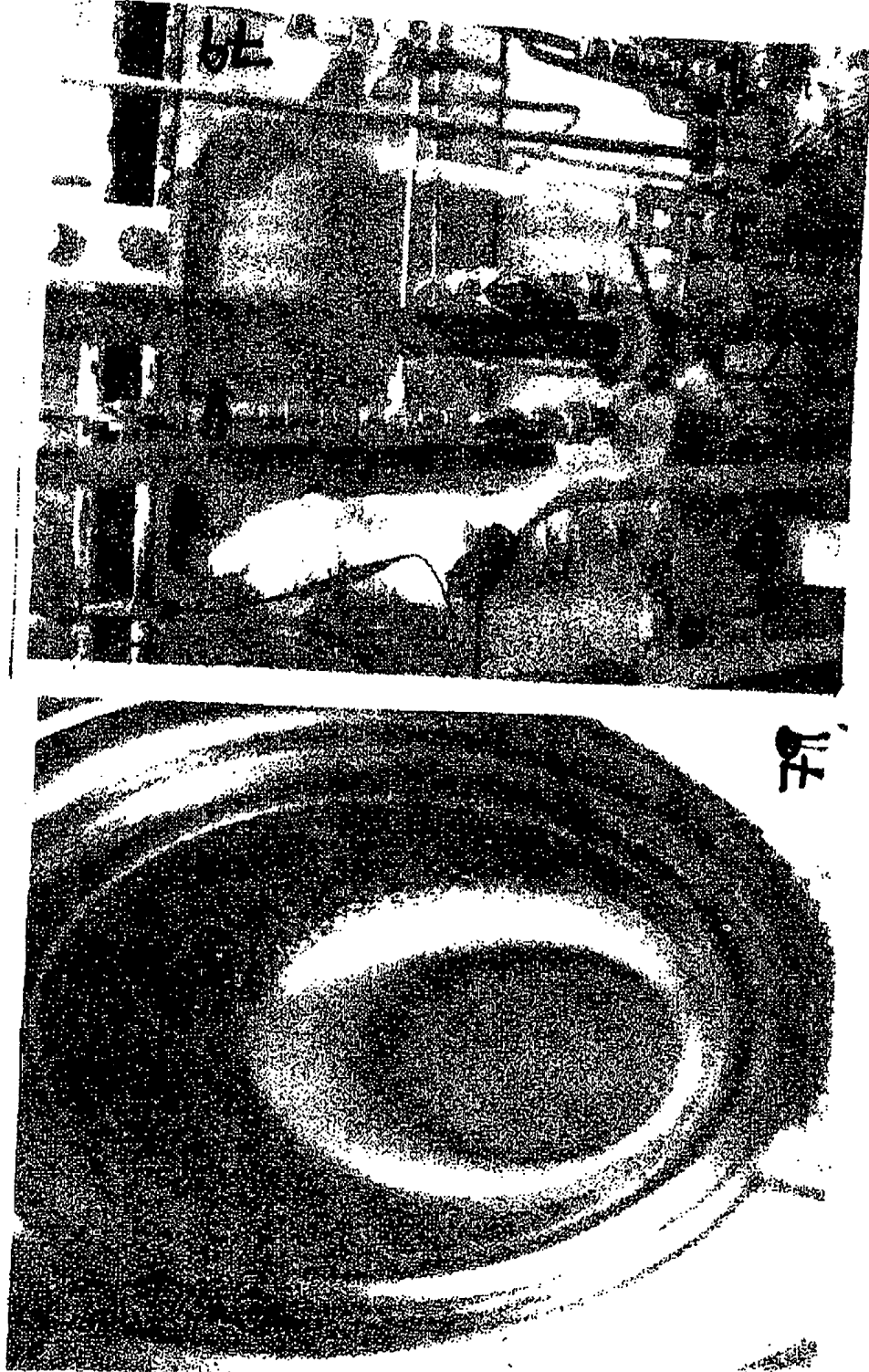
Run 00311-078 Using Catalyst Prepared by Fina Method
No Antifoulant



BEST AVAILABLE COPY

Declaration dated 2.23.06 Attachment 2 of 3
USSN 10/026,171 Docket No.: 1999U024.D1.US

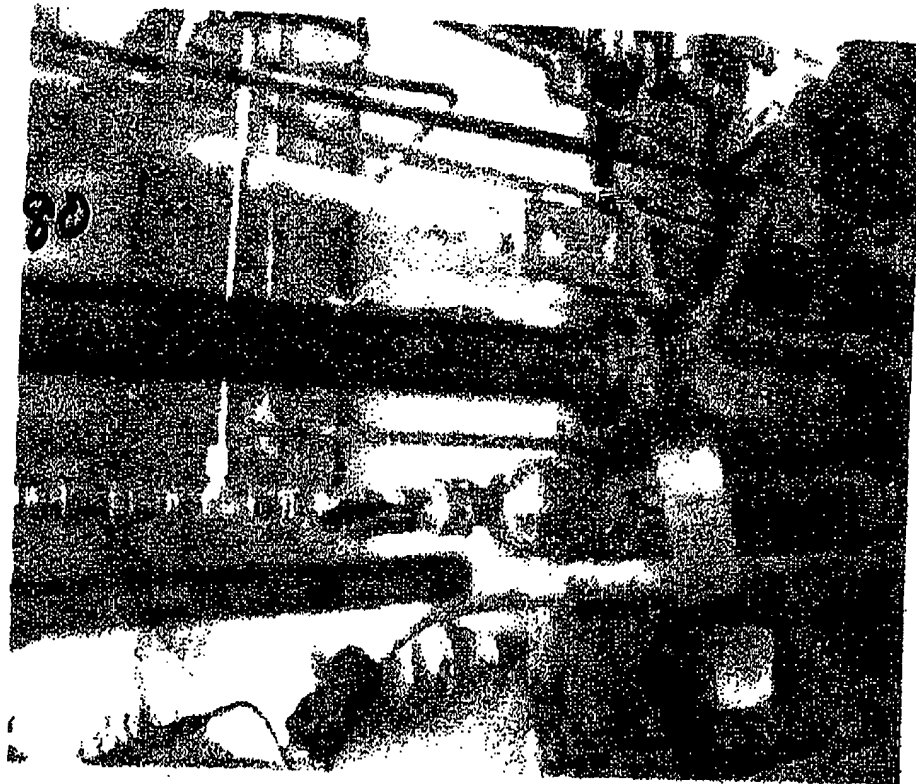
Run 00311-079 Using Catalyst Prepared by Fina Method
Antifoulant was presented during the polymerization test



BEST AVAILABLE COPY

Declaration dated 2.23.06 Attachment 3 of 3
USSN 10/026,171 Docket No.: 1999U024.D1.US

Run 00311-080 Using Catalyst Prepared with Univation Method
No Antifoulant



BEST AVAILABLE COPY

Declaration dated 2.23.2006 Attachment 3A
 USSN 10/026,171 Docket No.: 1999U024.D1.US

Compare the Performance of Metallocene Catalyst using Fina Prep. Method vs Univation's

Cat. ID	S MCN ⁺ -MAO	Prep. Conditions [S+MAO] / SiO2-600C	Drying	Run ID	Antifoulant ^{***} In Reactor	Yield	Cat Activity ^{**} gPE/gCat ^h	Observations
00277-132-1 (Univation Prep.)	85C - 15 min.	80C - 15 min	80C	00311-80	No	189.4	2841	Fouling Index = 0.5, light stirrer coating
				00311-78	No	189.5	2843	Fouling Index = 0.5, light stirrer coating
				00311-77	Yes	173.4	2601	Fouling Index = 0, no stirrer coating
00277-132-2 (Fina Prep.)	22C - 10 min	110C - 90 min	110C	00311-78	No	93.3	1400	FI = 2.0, fused PE ring formed, reactor coating ~1 inch, sticky resin
				00311-83	No	168.4	2528	FI = 1.0, reactor coating with about 1 inch band, resin very sticky
				00311-79	Yes	153	2295	FI = 1.0, reactor coating with about 1 inch band, resin sticky

* Both catalysts were prepared using the same raw materials and same quantities. S MCN = dimethyl silyl bis-tetrahydro-indenyl Zirconium dichloride
 ** All polymerization were performed under the identical condition using isobutane slurry.
 *** Antifoulant = Crompton Aluminum Stereate 22. Five mg antifoulant added for 1 gm of catalyst

BEST AVAILABLE COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	: 10/026,171	Confirmation No.	9429
Applicant	: Agapios Agapiou, et al.		
Filed	: December 21, 2001		
TC/A.U.	: 1755		
Examiner	: James W. Pasterczyk		
Docket No.	: 1999U024.D1.US		
Customer No.	: 25959		
Date	: February 23, 2006		

Commissioner for Patents
Mail Stop Amendments
P. O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL DECLARATION UNDER 37 CFR § 1.132

Sir:

I, Agapios K. Agapiou, declare as follows:

I am a co-inventor of the description and all the claimed subject matter in the above referenced patent application. The purpose of this Declaration is to demonstrate that the claims describing heating techniques used in the reaction between metallocenes and methyl alumoxane (MAO) resulted in unexpected and surprising improvement (lowering) of reactor fouling and maintenance or improvement in catalyst activity, when compared to no added heat during the reaction between the metallocenes and MAO. The techniques claimed, furthermore, are not disclosed in either WO 96/35729 or US 5,914,289 (Razavi I or II). In the examination of the above referred patent application, the Examiner relies on these two references, Razavi I and/or Razavi II, in rejecting the claims. Under my direction and control, a series of experiments was conducted to evaluate the catalyst preparation techniques of these two references and compare these reference techniques to our claimed techniques.

Catalyst Preparation Comparing Univation and Razavi I&II Methods**Univation Catalyst Preparation**

1999U0024.D1.US.132.A.K.A.2.22.06.doc

- 1 -

weighing the cooled resin. Notes and photos about fouling characteristics of each polymer are included in the accompanying documentation of the runs.

As table 1 and the photos clearly indicate, pre-heating the metallocene/MAO mixture prior to heating it with silica is critical to obtaining the improved (lower) fouling and (higher) catalyst activity performance. A catalyst was made (00277-132-2) using the standard conditions for the examples in the Razavi documents (no pre-heating of the metallocene/MAO mixture, but heating the metallocene/MAO/silica mixture at 110°C for 90 minutes) and polymerized in a 2.2 liter autoclave reactor. The resulting polymer fouled the reactor badly (see photos 78 & 79, attached, corresponding to polymerization runs 00311-78 & 00311-79 respectively). When a catalyst was made in run 00311-80 using identical reagents to the ones in the above example but with pre-heating the metallocene/MAO mixture prior to silica deposition/reaction (as presently claimed), the resulting polymer after polymerization at identical conditions exhibited granular morphology and no fouling was observed (photo 80).

We believe that the importance of the pre-heating step (our invention) is paramount to obtaining a non-fouling catalyst when using bridged metallocenes because driving the sparingly soluble metallocene reaction with MAO to the complete ion pair, allows the totally soluble catalyst component to stay chemically attached to the support and thus prevent fouling.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or an patent issuing therefrom.

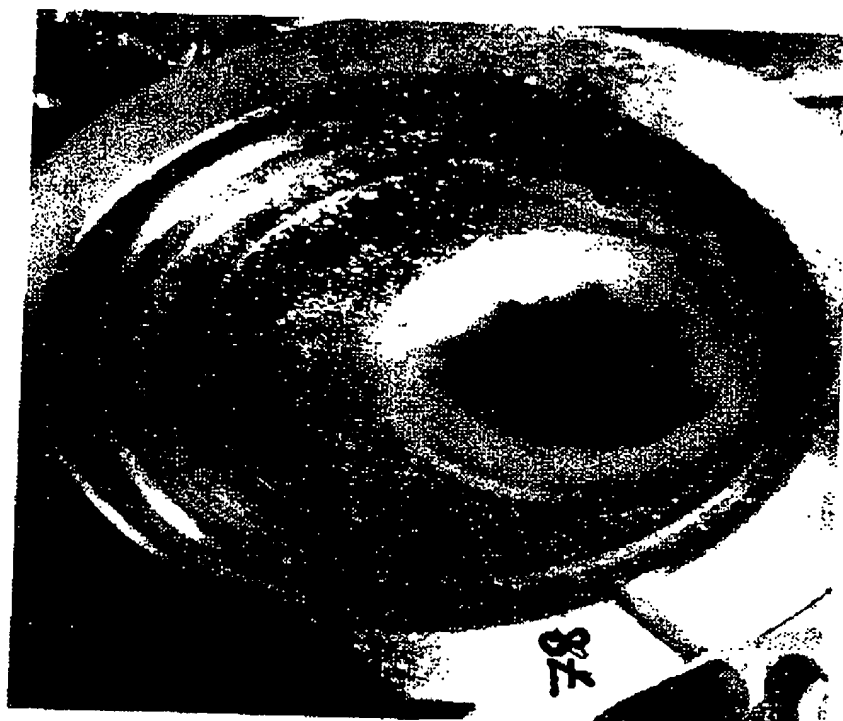
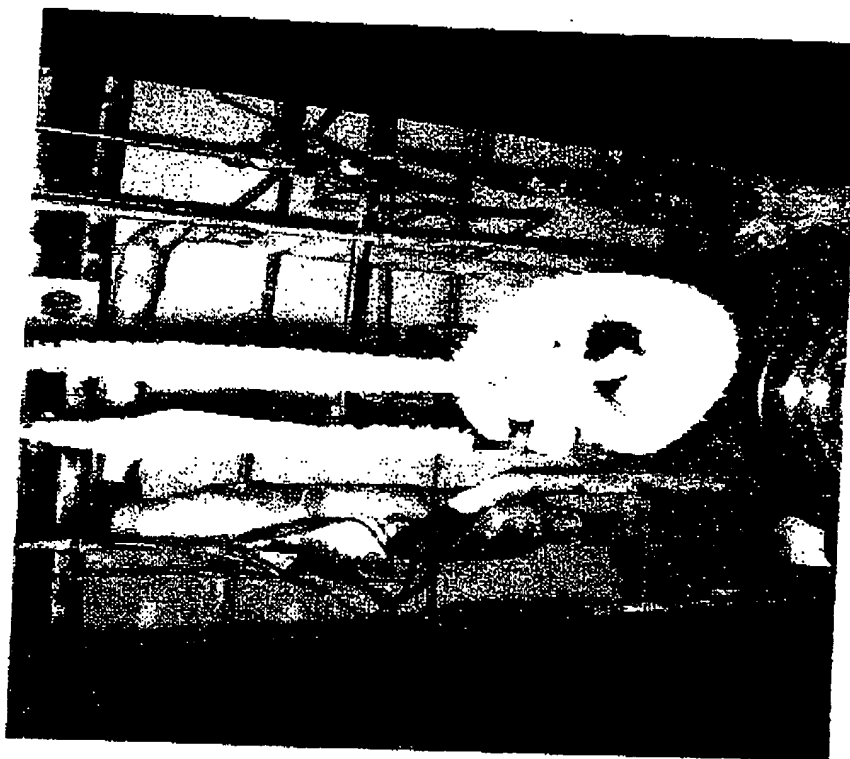
Respectfully submitted,

February 23, 2006
Date

Agapios K. Agapiou
Agapios K. Agapiou

Declaration dated 2.23.06 Attachment 1 of 3
USSN 10/026,171 Docket No.: 1999U024.D1.US

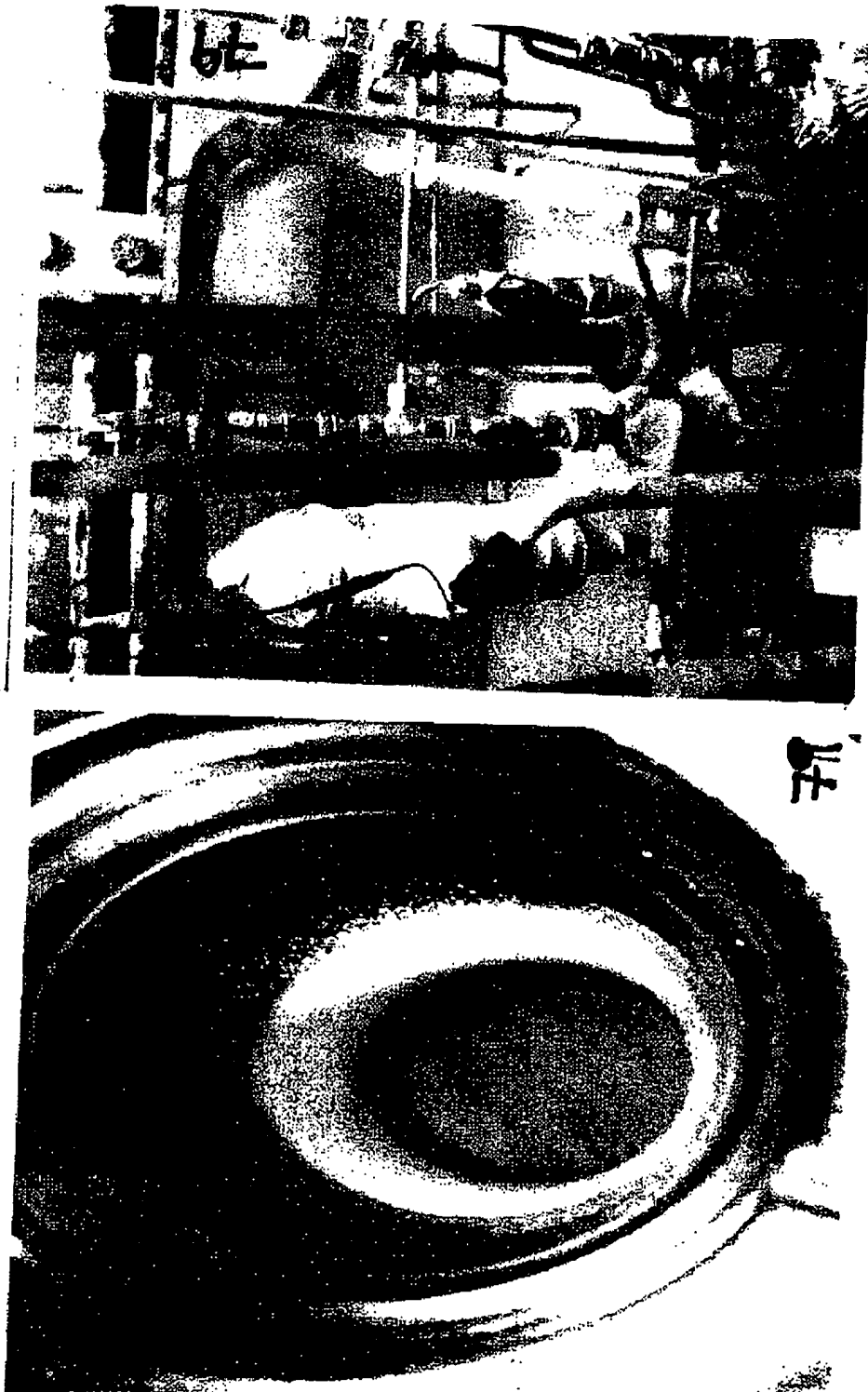
Run 003111-078 Using Catalyst Prepared by Fina Method
No Antifoulant



BEST AVAILABLE COPY

Declaration dated 2.23.06 Attachment 2 of 3
USSN 10/026,171 Docket No.: 1999U024.D1.US

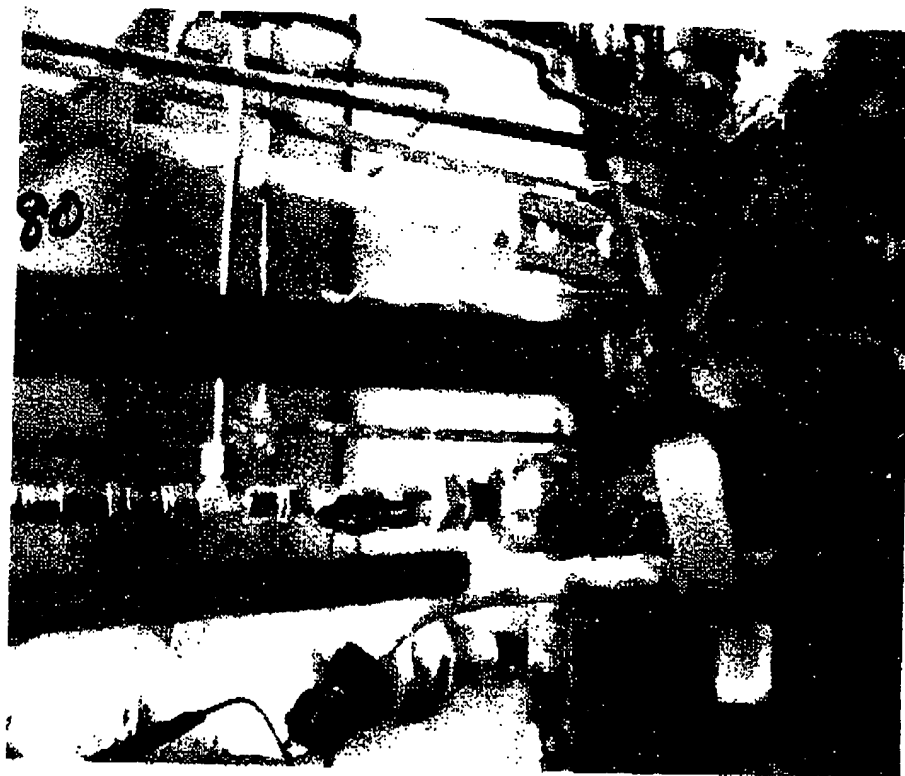
Run 00311-079 Using Catalyst Prepared by Fina Method
Antifoulant was presented during the polymerization test



BEST AVAILABLE COPY

Declaration dated 2.23.06 Attachment 3 of 3
USSN 10/026,171 Docket No.: 1999U024.D1.US

Run 00311-080 Using Catalyst Prepared with Univation Method
No Antifoulant



BEST AVAILABLE COPY

Declaration dated 2.23.2006 Attachment 3A
USSN 10/026,171 Docket No.: 1999U024.D1.US

Compare the Performance of Metallocene Catalyst using Fina Prep. Method vs Univation's

Cat. ID	S MCN*+MAO	Prep. Conditions		Run ID	Antifoulant** in Reactor	Yield	Cat Activity*** gPE/gCat ^h	Observations
		[S+MAO]	/ SiO2-600C					
00277-132-1 (Univation Prep.)	85C - 15 min.	80C - 15 min	80C	00311-80	No	189.4	2841	Fouling Index = 0.5, light stirrer coating
				00311-76	No	189.5	2843	Fouling Index = 0.5, light stirrer coating
				00311-77	Yes	173.4	2601	Fouling Index = 0, no stirrer coating
00277-132-2 (Fina Prep.)	22C - 10 min	110C - 90 min	110C	00311-78	No	83.3	1400	FI = 2.0, fused PE ring formed, reactor coating ~1 inch, staticky resin
				00311-83	No	168.4	2526	FI = 1.0, reactor coating with about 1 inch band, resin very staticky
				00311-79	Yes	153	2295	FI = 1.0, reactor coating with about 1 inch band, resin staticky

* Both catalysts were prepared using the same raw materials and same quantities. S MCN = dimethyl silyl bis-tetrahydro-Indenyl Zirconium dichloride

** All polymerization were performed under the identical condition using isobutane slurry.

*** Antifoulant = Crompton Aluminum Stereate 22. Five mg antifoulant added for 1 gm of catalyst

BEST AVAILABLE COPY